Applicant : Ajay P. Sravanapudi and Richard Dean   Attorney's Docket No.: 16438-011001
Day
Serial No. : 09/800,509
Filed   : March 8, 2001
Page   : 2 of 20

          Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

<u>Listing of Claims</u>:

Please amend claims as follows:

          1. (Currently Amended) A system for multimodal information services, comprising:
          a multimodal information service mechanism for providing said multimodal information
services, <u>said multimodal information services including a service capable of receiving requests</u>
<u>from a user for information represented in a source modality and responding to the requests by</u>
<u>retrieving the information in the source modality and delivering the information back to the same</u>
<u>user that requested the information, but in a destination modality that is different from the source</u>
<u>modality</u>;
          an information user <u>at a user site</u> connecting to a first network through at least one
communication device, said first network connecting <u>said user site</u> to said multimodal
information service mechanism, said information user requesting and receiving said multimodal
information services from said multimodal information service mechanism through said
communication device;
          and an information source connecting to said multimodal information service mechanism
via a second network, said information source providing multimodal information <u>requested by</u>
<u>said information user</u> to said multimodal information service mechanism to facilitate said
multimodal information services<u>, said information source being external to said user site and said</u>
<u>multimodal information service mechanism</u>.

Applicant : Ajay P. Sravanapudi and Richard Dean   Attorney's Docket No.: 16438-011001
Day
Serial No. : 09/800,509
Filed   : March 8, 2001
Page   : 3 of 20

2. (Original) The system according to claim 1, wherein said communication device includes at least one of:

a wireless phone; a PDA; a pager; a facsimile device; or an e-mail mechanism.

3. (Original) The system according to claim 1, wherein said first network and said second network include at least one of: the Internet; an intranet; a wireless network; or a public service telephony network.

4. (Original) The system according to claim 1, wherein said information source includes at least one of a:

database; a web site; and an application.

5. (Original) The system according to claim 1, wherein said multimodal information service mechanism comprises:

a multimodal platform;

and at least one multimodal information service application, each of said at least one multimodal information service application providing a service to said information user and being constructed based on said multimodal platform.

6. (Currently Amended) A system for a multimodal platform, comprising: a multimodal connection mechanism for switching multimodal data through appropriate channels; and a multimodal interaction enabling mechanism for facilitating multimodal data rendering, wherein said multimodal data is requested by a user at a user site and said multimodal interaction enabling mechanism comprises: a data adapter for rendering data in a source modality into data in a destination modality, said data in said source modality being obtained from an information source external to the user site and the multimodal platform; an adapted data storage for storing data in said destination modality, converted by said data adapter; and a multimodal server for

facilitating said data adapter to perform said rendering said data in source modality to said data
in destination modality.

7. (Original) The system according to claim 6, wherein said multimodal connection
mechanism comprises: at least one data channel for transferring data in different modalities; and
a channel switching mechanism for routing multimodal data to said at least one data channel.

8. (Cancelled).

9. (Currently Amended) The system according to claim 86, wherein said data adapter
comprises: an application interface mechanism for performing interaction between said
multimodal platform and a multimodal information service application; a data retrieval
mechanism for accessing said data in source modality from said information source; and a
multimodal data rendering mechanism for rendering said data in source modality into said data in
destination modality wherein said destination modality being specified by said application
interface mechanism based on the interaction between said multimodal platform and said
multimodal information service application.

10. (Original) The system according to claim 9, wherein said multimodal data rendering
mechanism comprises at least one of: an electronic mail renderer for rendering said data in
source modality into an electronic mail; a facsimile renderer for rendering said data in source
modality into a facsimile; a paging renderer for rendering said data in source modality into a
paging message; a text-to-speech renderer for rendering data in text modality into data in speech
modality; and a speech-to-text renderer for rendering data in speech modality into data in text
modality.

11. (Original) The system according to claim 10, wherein said multimodal server
comprises at least one of: a mail server for facilitating said electronic mail renderer; a facsimile

server for facilitating said facsimile renderer; a short message service for facilitating said paging renderer; a text-to-speech engine for facilitating text-to-speech renderer by generating audio speech data according to text data; an automatic speech recognizer for facilitating speech-to-text renderer by generating text data based on audio speech data using automated speech recognition; and a telephony server for facilitating said text-to-speech engine and said automatic speech recognizer.

12. (Currently Amended) A system of a multimodal information service application for a voice-enabled Internet access service, comprising:

a dialog unit for performing a voice based dialog with an information user at a user site;

a voice clipboard for storing the content of said dialog;

a request queue for storing a service request issued by said information user during said voice based dialog, said service request requesting, from said voice-enabled Internet access service, Internet information to be delivered to said information user in a destination modality, said request being accessed by an application interface mechanism of a multimodal platform to generate requested Internet information in said destination modality said requested Internet information being stored at a location external to said user site and said multimodal platform;

and a result queue for storing said Internet information in said destination modality, generated by said multimodal platform according to said request.

13. (Original) The system according to claim 12, further comprising a statistics collection unit for gathering statistics based on said voice based dialog.

14. (Currently Amended) A system of a multimodal information service application for multimodal e-business alert service, comprising:

a multimodal e-business alert configuration that dictates different aspects of how said multimodal e-business alert service is to behave; and

a multimodal e-business alert unit for generating a multimodal e-business alert based on a

multimodal e-business alert specification contained in an event issued by an e-business provider and said multimodal e-business alert configuration, said multimodal e-business alert, once generated, being sent to an e-business consumer according to said multimodal e-business alert specification, wherein said multimodal e-business alert unit comprises a history database for storing information related to the history of sending e-business alerts to and receiving responses from said e-business consumer.

15. (Original) The system according to claim 14, wherein said multimodal e-business alert unit comprises: at least one incoming request queue for queuing an event representing an alert request received from said e-business provider; an e-business alert service for constructing said e-business alert request based on said alert request and said multimodal e-business alert specification, for sending said e-business alert request to a multimodal platform, and for tracking the performance of said multimodal e-business alert service via various queues; and at least one outgoing request queue for queuing said e-business alert request, said at least one outgoing alert queue connecting to a multimodal data rendering mechanism of a multimodal platform, each of said at least one outgoing request queue corresponding to a different modality, said e-business alert request queued in said at least outgoing queue being accessed, by said multimodal data rendering mechanism of said multimodal platform to generate an e-business alert in an destination modality according to said e-business alert specification and to send said e-business alert to said e-business consumer.

16. (Original) The system according to claim 15, wherein said at least one incoming request queue comprises at least one of: an incoming ASAP queue for queuing an event, received from said e-business provider, that is to be converted into a multimodal e-business alert and that is specified to be sent to said e-business consumer as soon as possible; and an incoming timed queue for queuing an event, received from said e-business provider, that is specified to be sent as a multimodal e-business alert to said e-business consumer at a given time.

17. (Original) The system according to claim 15, wherein said at least one outgoing
request queue comprises at least one of: a facsimile queue for queuing an e-business alert request
that corresponds to an e-business alert that is to be sent to said e-business consumer via
facsimile; an electronic mail queue for queuing an e-business alert request that corresponds to an
e-business alert that is to be sent to said e-business consumer via an electronic mail; a pager
queue for queuing an e-business alert request that corresponds to an e-business alert that is to be
sent to said e-business consumer via a pager; and a voice queue for queuing an e-business alert
request that corresponds to an e-business alert that is to be sent to said e-business consumer via a
voice channel.

18. (Currently Amended) The system according to claim 15, further comprising: a
response queue for storing an outcome of sending an e-business alert to said e-business
consumer; at least one status queue for storing information related to the performance of said e-
business alert service; and a data recorder for recording information from said at least one status
queue; and a history database for storing information related to the history of sending e business
alerts to and receiving responses from said e business consumer.

19. (Currently Amended) A method for multimodal information services, comprising:
receiving, by a multimodal information service application in a multimodal information
service mechanism, a service request from an information user at a user site via a first network
connecting said user site to the multimodal information service mechanism, said request being
issued through a communication device and requesting a service offered by said multimodal
information service application;

identifying an information source according to said request, from where the requested
information desired by said information user can be retrieved;

determining a source modality in which said requested information is represented and a
destination modality in which said requested information is to be delivered to said information
user;

retrieving, by a multimodal platform in said multimodal information service mechanism, said requested information from said information source in said source modality to generate source information, said information source being located external to said user site and said multimodal information service mechanism;

generating destination information from said source information by rendering said source information into said destination information, if said source information is not in said destination modality;

switching said destination information into a channel that is appropriate for said destination modality;

and sending, by said multimodal information service application, said destination information to said information user from said channel to said communication device via a second network.

20. (Currently Amended) The method according to claim 19, wherein said communication device includes at least one of:

a wireless phone; a PDA; a pager; a facsimile device; or an electronic mailing mechanism.

21. (Original) The method according to claim 19, wherein said first network and said second network include at least one of:

the Internet; a wireless network; or a public service telephony network.

22. (Original) The method according to claim 19, wherein said information source includes at least one of:

a database; a web site; and an application.

23. (Original) The method according to claim 19, further comprising storing said destination information, rendered by said rendering, in an adapted data storage.

24. (Currently Amended) A multimodal information service application method for
voice-enabled Internet access service, comprising:

conducting, by a dialog unit in said multimodal information service application, a
conversation with an information user at a user site via a communication device; updating a
clipboard according to said conversation;

processing said conversation to extract a request for information, specified by said
information user, and a destination modality in which said information is to be sent to said
information user;

sending said request for information and said destination modality to a multimodal
platform that facilitates data rendering among different modalities, said requested information
being located external to the user site and to the multimodal platform;

generating, by said multimodal platform, destination information by rendering said
information into said destination modality according to said request;

receiving, by said multimodal information service application from said multimodal
platform, said destination information;

and sending said destination information to said information user.

25. (Original) The method according to claim 24, wherein said conversation comprises
at least one dialog, each of said at least one dialog including a prompt and a response.

26. (Original) The method according to claim 25, wherein said clipboard stores the
content of said at least one dialog according to a schema defined in a standard language.

27. (Original) The method according to claim 26, wherein said standard language
includes Voice Extensible Markup Language.

28. (Original) A method of multimodal information service application for multimodal e-business alert service, comprising: constructing a multimodal e-business alert configuration that dictates how said multimodal e-business alert service is to behave; issuing an event, by an e-business provider, to said multimodal e-business alert service, said event requesting said multimodal e-business alert service to send an e-business alert to an e-business consumer, said event including a multimodal e-business alert specification that instructs said multimodal e-business alert service how said e-business alert is to be sent to said e-business consumer; sending, by said multimodal information service application, a multimodal e-business alert to said e-business consumer based on said multimodal e-business alert configuration and said multimodal e-business alert specification contained in said event, said multimodal e-business alert being rendered by a multimodal platform in a multimodal information service mechanism.

29. (Original) The method according to claim 15 and claim 28, wherein said multimodal e-business alert specification comprises: an e-business history; and a push.

30. (Original) The method according to claim 29, wherein said push comprises at least one of: at least one criterion under which a multimodal e-business alert is to be sent to said e-business consumer; a default means by which said multimodal e-business alert is to be sent to said e-business consumer; or zero or more alternative means to send said multimodal e-business alert when an attempt to send said e-business alert using said default means fails, said zero or more alternative means being applied when a condition is satisfied.

31. (Original) The method according to claim 30, wherein said default means and said zero or more alternative means include at least one of: electronic mail; facsimile; pager; wired phone; or wireless phone.

32. (Original) The method according to claim 30, wherein said condition includes a situation in which a phone, to where an e-business alert is sent using said default means, is busy.

33. (Original) The method according to claim 30, wherein said condition includes the situation in which a phone, to where an e-business alert is sent via one of said zero or more alternative means, is not answered.

34. (Original) The method according to claim 30, wherein said sending a multimodal e-business alert comprises: receiving, by said multimodal information service application, said event from said e-business provider; retrieving said e-business alert configuration associated with said e-business consumer; processing said multimodal e-business alert specification to generate said e-business alert request; pushing said e-business alert request into one of a plurality of outgoing request queues; generating, by said multimodal platform, said e-business alert based on said e-business alert request; and sending said e-business alert to said e-business consumer using said default means through a multimodal connection mechanism in said multimodal platform.

35. (Original) The method according to claim 34, further comprising: examining an response yielded from said sending to see whether said sending is successful, said examining generating an outcome of either negative or positive; updating an e-business history, if said outcome is positive; repeating the acts starting from said processing, if said alternative means is defined in said multimodal e-business alert specification.

36. (Currently Amended) A computer-readable medium encoded with a program for multimodal information services, said program comprising:

receiving, by a multimodal information service application in a multimodal information service mechanism, a service request from an information user at a user site via a first network connecting said user site to the multimodal information service mechanism, said request being

issued through a communication device and requesting a service offered by said multimodal information service application;

identifying an information source according to said request, from where the requested information desired by said information user can be retrieved;

determining a source modality in which said requested information is represented and a destination modality in which said requested information is to be delivered to said information user;

retrieving, by a multimodal platform in said multimodal information service mechanism, said requested information from said information source in said source modality to generate source information, said information source being located external to said user site and said multimodal information service mechanism;

generating destination information from said source information by rendering said source information into said destination information, if said source information is not in said destination modality;

switching said destination information into a channel that is appropriate for said destination modality;

and sending, by said multimodal information service application, said destination information to said information user from said channel to said communication device via a second network.

37. (Original) The medium according to claim 36, said program further comprising storing said destination information, rendered by said rendering, in an adapted data storage.

38. (Original) A computer-readable medium encoded with a program for voice-enabled Internet access service, application, a conversation with an information user via a communication device, updating a clipboard according to said conversation; processing said conversation to extract a request for information, specified by said information user, and a destination modality in which said information is to be sent to said information user; sending said request and said

destination modality to a multimodal platform that facilitates data rendering among different modalities;

generating, by said multimodal platform, destination information by rendering said information into said destination modality according to said request;

receiving, by said multimodal information service application from said multimodal platform, said destination information; and

sending said destination information to said information user.

39. (Currently Amended) A computer-readable medium encoded with a program for multimodal e-business alert service, said program comprising:

constructing a multimodal e-business alert configuration that dictates how said multimodal e-business alert service is to behave;

issuing an event, by an e-business provider, to said multimodal e-business alert service, said event requesting said multimodal e-business alert service to send an e-business alert to an e-business consumer, said event including a multimodal e-business alert specification that instructs said multimodal e-business alert service how said e-business alert is to be sent to said e-business consumer;

sending, by said multimodal ~~information service application~~e-business alert service, a multimodal e-business alert to said e-business consumer based on said multimodal e-business alert configuration and said multimodal e-business alert specification contained in said event, said multimodal e-business alert being rendered by a multimodal platform in a multimodal information service mechanism; and

storing a history of the e-business alert sent by the multimodal e-business alert service and responses received from said e-business consumer.

40. (Original) The medium according to claim 39, wherein said sending a multimodal e-business alert comprises: receiving, by said multimodal information service application, said event from said e-business provider; retrieving said e-business alert configuration associated

with said e-business consumer; processing said multimodal e-business alert specification to
generate said e-business alert request; pushing said e-business alert request into one of a plurality
of outgoing request queues; generating, by said multimodal platform, said e-business alert based
on said e-business alert request; and sending said e-business alert to said e-business consumer
using said default means through a multimodal connection mechanism in said multimodal
platform.

41. (Currently Amended) The medium according to claim 40, said program further
comprising: examining an response yielded from said sending to see whether said sending is
successful, said examining generating an outcome of either negative or positive; updating the~~an~~
~~e-business~~ history, if said outcome is positive; repeating the acts starting from said processing, if
said alternative means is defined in said multimodal e-business alert specification.

42. (New) The method of claim 19, further comprising:
storing the generated destination information at said multimodal platform for future use,
said multimodal platform being external to the user site.

43. (New) The method of claim 42, wherein generating destination information from
said source information comprises:
determining whether said source information in said destination modality already exists
in said multimodal platform; and
if said source information already exists, then using the existing information as the
destination information instead of generating the destination information; otherwise, generating
the destination information.

44. (New) The system of claim 1, wherein the multimodal information service
mechanism is operable to perform operations comprising:

converting said requested multimodal information from a source modality in from the source modality; and

storing said converted information at the multimodal information service mechanism for future use, the multimodal information service mechanism being external to the user site.

45. (New) The system of claim 44, wherein converting said requested multimodal information comprises:

determining whether said converted information already exists in the multimodal information service mechanism; and

if said converted information already exists, then using the existing information; otherwise, converting said requested multimodal information.